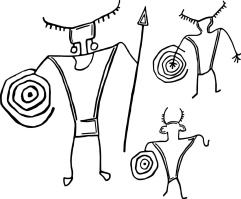
[](http://www.utahrockart.org) Utah Rock Art Research Association

P.O. Box 511324 Salt Lake City, UT 84151-1324 [www.utahrockart.org](http://www.utahrockart.org)

September 2, 2016

BLM Price Field Office

Attention: Amber Koski

125 South 600 West

Price, UT 84501

Dear Amber:

Thank you for the opportunity to review and comment on the Class I Cultural Resource Inventory (Class I) in development for the Molen Reef.

The Utah Rock Art Research Association (URARA) is the largest organization dedicated to Utah rock art. Our mission is:

* To lead in the preservation and understanding of the value of rock art.
* To encourage the appreciation and enjoyment of rock art sites.
* To assist in the study, presentation, and publication of rock art research.

Our 300 members have professional, academic, and avocational interest in Utah rock art. Combined, our membership represents the largest body of knowledge regarding Utah rock art. We have worked with the Price Field Office (PFO) as a consulting party and have an extensive history of collaborating with the BLM throughout Utah.

We appreciate the level of effort and attention to detail that has gone into the development of this Class I. The following are our comments on this material.

**Literature Review**

We appreciate the thoughtful cultural history developed for the Molen Reef. We recognize that the intent of the Class I is only to provide a literature review and not an analysis of the literature. However, we have a couple of comments regarding the Barrier Canyon Style (BCS) of rock art and dating.

Manning[[1]](#footnote-1) asserts that BCS dates from A.D. 1300 to 1600. This is not supported by the archeological evidence. Superimposition is the practice of creating one image on top of a previous image. There are several sites were Fremont figures and Anasazi figures are superimposed on BCS figures. We are unaware of any site where a BCS figure is superimposed over a Fremont or Anasazi figure. Superimposition is a relative form of dating rather than an absolute form of dating. We cannot know the age difference between the “top” figure and the “bottom” figure. It may be 1 hour or 1000 years. But the fact that both the Fremont and Anasazi peoples exited Utah by A.D. 1300 means that subsequent dating for BCS is inappropriate.

We are also concerned about the inclusion of the Pederson[[2]](#footnote-2) optically stimulated luminescence dating from the Great Gallery without the inclusion of other dating that has been done at the same location. None of this data is conclusive at this point, but if one data source is to be included in the Class I, it only seems fair to include the other literature dating rock art at the same location.

With regards to the Fremont rock art description we disagree with the assertion that “The location of Fremont rock art is often high on cliff walls and in locations with difficult access.”[[3]](#footnote-3) Our experience with the large majority of Fremont rock art within the Molen Reef is that it is often on boulders, cliff faces from ground level to 15 feet above the ground, on horizontal surfaces, and at the top of low talus slopes. Location is an important point since it relates to access and vandalism in the Class I.

There is no mention of the numerous Fremont sandal petroglyphs which may be the most frequently occurring rock art in the project area. The sandal style petroglyphs are generally located on horizontal surfaces in the project area extending north to the San Rafael River and rock outcrops in the eastern flat areas. They are associated with horizontal rock surfaces on ridgelines, overlooks, and water sources often related to the San Rafael river drainage. We have located over fifty sandal sites. These sites are currently being damaged by off-road ATV use and are vulnerable to vandalism.

There is tremendous variation in Fremont rock art in the Molen Reef area. Fremont rock art includes simple painted ovoid shaped circles, classic Vernal Style Fremont figures armed and carrying heads, numerous portrayals of three San Rafael/ Torrey Style hand-holding figures, and delicate crayon-like drawings of bighorn sheep and abstract patterns. This great variety of Fremont rock art leads us to believe that the Molen Reef area exhibits the greatest cross pollination of Fremont rock art styles anywhere in the state of Utah.

We believe that rock art within the project area also includes Shoshone influence. We would be pleased to discuss specific sites and the relevant Shoshone cultural markers.

We are not paleontologists but thought we should also comment on this aspect of the project area as well. The area between the lower and higher Molen Reef is rich in fossils from the Jurassic Period. We are also aware of dinosaur tracks in several places within the project area.

**Project Area**

We are confused by the project area descriptions. It is described as “bounded by State Route 10 on the west, on the south by Interstate 70, on the east by a geologic formation known as ‘the Reef’ and on the north by the San Rafael River.”[[4]](#footnote-4) However, the map shown in Figure 1 does not seem to reflect this description. The northern part of the area described in the text seems to be excluded in the Figure 1 map. This is a concern to us since important cultural areas such as Ferron Box and King’s Crown ACEC seem to be excluded. Other important areas in the south are included within the textual description, but not within the actual project boundaries.

The Molen Reef includes extensive historic inscriptions extending from the late 1800s. The numerous carved names of cowboys highlight the important history of the families who pioneered the Eastern San Rafael. This is another reason to extend the project area to include Ferron Creek Boxes and areas further north where cowboy history abounds.

**Data Quality**

*Small Site Sample Size*

Compared to the large field office areas in which other predictive models are being developed, the Molen Reef is a small area and has few cultural sites on which to build a statistical model. The Class I indicates that there are 215[[5]](#footnote-5) archeological sites within the Molen Reef project. The Class I also shows that only 4% of the project has been surveyed[[6]](#footnote-6). Predictive models need good data sets in order to develop useful statistics. We are doubtful this is sufficient data to build a good model especially since some of the data must be excluded for testing purpose. Additionally, the bulk of the data is derived from surveys associated with Section 106 of the National Historic Preservation Act. “The lack of connection between site locations and clearly delineated, systematically conducted cultural resource inventories introduces significant bias into the existing site sample.”[[7]](#footnote-7) Thus the data set is both small and a non-representative sample of the Molen Reef resources. We believe that statistical cultural site prediction requires a solid data set that this model lacks.

We are concerned that the only data used in the development of the model are sites available in the IMACS system. We are aware of five other data sources that may have been useful in the development of the model.

* Jonathan Bailey provided Ahmed Mohsen (Price Field Office Manager) with 400 site data forms from the Molen Reef area (about 90% were for rock art sites with multiple panels and 10 % archeological sites ) in May 2015. There may have been some duplication of sites within IMACS but this is a potentially huge increase in sites available for analysis.
* Jonathan Bailey also provided the Price Field Office with 700 rock art sites in the San Rafael area some of which are located in the Molen Reef project area.
* URARA has a site database that includes information for the Molen Reef. Our information only has GPS locations and doesn’t include site type but given the location it can easily be assumed that the vast bulk of our data would relate to rock art.
* Castleton[[8]](#footnote-8) includes sites from this region. Castleton lacks specific location information and many of his sites are likely documented in IMACS, but it could be useful to test that assumption.
* Emery and Carbon County locals, R.V. Jones and D.E. Goodfellow studied and described the rock art panels in the Ferron Creek , Muddy Creek, North Salt Wash, and San Rafael River drainages. They published their results in four studies which were distributed by the Price Museum until Jones’ death several years ago. These studies include drawings of panels and location descriptions but no GPS information.

We are confused by the fact that Table 1[[9]](#footnote-9) does not include any Archaic period rock art. Given the discussion within the Class I of BCS as an Archaic style of rock art and known BCS sites within the Molen Reef area this seems to be an error.

*Model Variables – All Cultural Sites*

Assigning consistently weighted environmental variables to different cultural groups using the land at different times is not valid. The Class I recognizes these differences[[10]](#footnote-10) and then dispenses with them in the actual development of the model. This predictive model uses broad simplification of temporal, climatic, geographical, and cultural variation in order to reduce complexity in computer processing. But reality *is* complex and requires high data levels to accurately model.

*Model Variables – Rock Art*

There is data relevant to rock art which is not part of the variables used in the model. For example:

* We know that rock art sites are much more common at canyon and drainage confluences.
* Protected rock surfaces (overhangs, alcoves, small caves) are important for rock art either because they have protected the rock art or were deliberately chosen as site locations.
* Isolated boulders independent of slope (may be found on talus slopes or flat terrain)
* URARA members have also commented on aesthetics, acoustics, archeoastronomy, viewshed, prehistoric roads, horizontal rock surfaces, and a variety of other possible data points not included in the model for the location of rock art sites.
* Ethnographic research from modern Native American tribes indicates that the “mythological landscape” was important in terms of where sites were located. These landscapes are places where one or more cultures imbue the land with meaning. This meaning influences how a culture uses the land. Elements of the land, such as springs, mountain peaks, certain boulders and caves may be seen as sacred or inhabited by spirits. As such, they may be avoided, sites of prayers or be ceremonial sites. Some archeologists believe many rock art panels are associated with what we call “symbolic” or “mythical” landscapes. The rock art site participates in a cultural narrative rather being a located for geographic reasons such as distance to water, slope, elevation, etc. For example, certain Dinwoody petroglyphs in Wyoming are carved on a rock surface with special attention given to the way light and shadows cross the surface creating the impression of movement in the carving. Petroglyph owls seem to open and close their eyes as the shadows shift. Human figures appear to weep, light creates an impression of tears rolling down rock faces. Carved suns seem to radiate light. This is one of the many reasons why a statistical model designed to find repeating site locations based on topographic variables will not be successful predicting rock art sites which reflect or participate and a landscape shaped by an ancient cultural narrative.

We understand that many of the variables that we mentioned are not within currently available GIS datasets. Our comments are on data quality and how it is degraded by the reliance on easy to obtain statistical data.

Given the extensive discussion of concerns about vandalism due to proximity and visibility from roads we think these two variables should be included in the modeling. We understand these variables should not be factors in predicting site locations but may be informative in management decisions to protect site locations.

*Consulting Party Statistical Expertise*

Statistical predictive modeling is well outside the skill set of URARA. While we can comment on macro issues apparent in the Class I we lack the expertise to comment on the quality of the model development, the mathematics, statistics, and computer modeling underlying its conclusions. We expect that most other consulting parties are in the same situation. Given the importance that the model will have in informing management decisions we believe it is imperative that the predictive model be reviewed by experts in the field who can provide a level of confidence as to the accuracy and use of this predictive model.

**Predictive Model Updates**

The Class I recommends that the predictive model be updated as new data becomes available:

Therefore, for a model to be successful, it needs to be regularly reviewed, updated, or dropped all together if it no longer serves its primary function.[[11]](#footnote-11)

It is unclear to us how this will be done. In our discussions with BLM archeologists they have indicated they don’t have the skill set to update the predictive model. Will the BLM maintain a contract with a consulting agency to improve the model over time? If the model is to be used to make planning decisions into the future we believe the model must be updated and tested on an annual basis to be as useful as possible.

*Use of the Predictive Model*

We support the careful use of a predictive model in which the government, consulting parties, and statistical peer groups concur has high predictive value for cultural resources. We would like to see the BLM establish specific minimum level predictive goals for the model to meet at the outset of the project. Without such targets consulting parties are simply left with an implicit assertion that this model is good enough. We do not believe that predictive models can ever replace Section 106 on the ground surveys.

This area needs to be preserved and managed as a “cultural landscape.” The significance of the Molen Reef area needs to be seen in its entirety, not in individual sites or probability clusters. Predicting cultural site probabilities to mitigate or avoid surface development completely misses the unique value of the Molen Reef.

**Additional Comments**

* We would appreciate improved quality of documentation to review in the future. PDFs with embedded text that allows for search capability are easy to produce from most source documents, maps with color would be an improvement, and the inclusion of a map of larger scale is absolutely necessary.

Thank you for your consideration of these comments.

Troy Scotter

Conservation & Preservation Committee

1. Page 10 [↑](#footnote-ref-1)
2. Page 10 [↑](#footnote-ref-2)
3. Page 13 [↑](#footnote-ref-3)
4. Page 2 [↑](#footnote-ref-4)
5. Page 17 [↑](#footnote-ref-5)
6. Page 17 [↑](#footnote-ref-6)
7. Page 18 [↑](#footnote-ref-7)
8. Castleton, Kenneth B. Petroglyphs and Pictographs of Utah: Volume One: The East and Northeast; Utah Museum of Natural History, Salt Lake City, 1984. [↑](#footnote-ref-8)
9. Page 21 [↑](#footnote-ref-9)
10. Pages 36 and 37 [↑](#footnote-ref-10)
11. Page 36 [↑](#footnote-ref-11)